REMARKS

This amendment is responsive to the office action dated February 25, 2004.

Claims 1, 2, 7 and 8 were pending in the application. Claims 1, 2, 7 and 8 were rejected. No claims were allowed by the Examiner.

By way of this amendment, the Applicant has amended Claim 1. Claims 2, 7 and 8 remain unchanged.

Accordingly, Claims 1, 2, 7 and 8 are currently pending.

I. REJECTION OF CLAIMS UNDER 35 USC 103

Claims 1, 2, 7 and 8 were rejected under 35 USC 103(a) as being unpatentable over US Patent No. 6,253,829 (Mashiko). The Examiner has stated that Mashiko discloses all of the steps of the present invention and that although the order of the steps provided in the present invention are different, the results are the same and accordingly the present invention is obvious in view of this reference.

The Applicant has amended claim 1 to further clarify the actual steps utilized to arrive at the novel heat sink assembly of the present invention. The Applicant has sought to clarify the actual steps required to produce the overmolded thermally conductive polymer heat sink and further clarify the method of the present invention as it compares to the cited Mashiko reference.

In this regard the Applicant has amended Claim 1 to include two additional method steps. The first is the provision of a polymer base matrix and the second is the mixing of a thermally conductive filler into the polymer matrix to form a thermally conductive polymer composition. In Applicant's method, these two additional steps are critical to the formation a thermally conductive polymer material that is suitable for injection molding around the heat pipe.

This can be contrasted with the method disclosed in Mashiko where the process involves pouring a molten metal such as copper, aluminum, magnesium, or a metal alloy into a die-casting cavity having protruding heat-radiation fins. When the molten metal in the cavity solidifies, the base is molded integrally with the radiation fins. (col. 2, lines 36-

42). The die-casting cavity may contain a heat pipe to provide a "construction in which the heat pipe is mounted in the base integrated with the fins." (col. 2, lines 63-67).

Thus, in the Mashiko metal die-casting process, the objective is to make an integrated heat-sink assembly having a base plate molded from a metallic material that is integrated with the metallic heat radiation fins having a large surface area. The base may contain a heat pipe which is surrounded by the cast metal. Referring to FIG. 28, Mashiko describes this casting process:

> From this state, the plunger 14 is moved in the direction of arrow of FIG. 28 to apply the pressure to the molten metal 13. Then, all the area of the outer circumference of the container 91 and the root of the injection nozzle 95 are wetted by the molten metal. Moreover, the lower edges of the individual fins 8 are confined by the molten metal 13. This state is left as it is for a predetermined time period to solidify the molten metal 13. Thus, the container 91 and the lower edges of the individual fins 8 are cast integrally with the base 7 of Al or its alloy so that these three components are jointed to one another.
>
> **(col. 15, lines 61-67 and col. 16, lines 1-4, emphasis added).**

This die-casting process is a relatively expensive process requiring substantial tooling and specialized molding equipment perform.

In contrast to the teachings in Mashiko, the Applicant's method, as recited in amended claim 1, includes providing a polymer matrix and then mixing a thermally conductive filler into the polymer to form a thermally conductive composition. Accordingly by utilizing a polymer material as provided for in the present invention, the end result produces a heat sink with a reduced weight in the overall completed structure, provides a high performance thermal conductivity and reduces the initial tooling and equipment expenditures.

Mashiko does not provide any suggestions or hints for a method of making such a heat pipe construction. As discussed above, the entire essence of Mashiko is to a process for casting molten metal to form a heat-sink assembly having an integrally-cast base plate with heat-radiation fins. Mashiko does not teach or suggest the steps of providing a polymer material and mixing a thermally conductive filler therein.

In view of the foregoing, Applicant believes that claim 1 (as amended) is in condition for allowance. Claims 2 and 7-8 are dependent on amended claim 1; thus, Applicant submits that these claims also are in condition for allowance. Accordingly, it is s respectfully requested that the rejections of claims 1-2 and 7-8 (as amended) under 35 U.S.C. §103(a) be withdrawn.

II. CONCLUSION

Accordingly, claims 1, 2, 7 and 8 are believed to be in condition for allowance and the application ready for issue.

Corresponding action is respectfully solicited.

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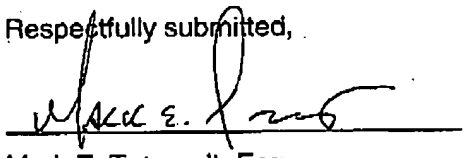
Respectfully submitted,



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